

REMARKS

The applicant respectfully appreciates the allowance of claims 15-20 and the tentative allowance of allowance of claim 3, which was objected to.

Reconsideration of the above-identified application in view of the present amendment is respectfully requested. By the present amendment, claim 1 and claim 11 have been amended to recite that the droplets having an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Support for this limitation can be found on page 9 lines 1 and 2 of the specification.

Below is a discussion of the 35 U.S.C. §103(a) rejection and the non-statutory double patenting rejection of claims 1-2, 4, 6-9, and 11-12.

35 U.S.C. §103(a) rejection.

Claims 1-2, 4, 6-9, and 11-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mehrotra et al. in view of Rogers et al. and Poole et al. '272.

Claim 1 as noted above was amended. Claim 1 now recites a process for preparing a free-flowing, phase-stabilized ammonium nitrate. In the process, a solution of ammonium nitrate, a surfactant, an inert liquid, and an ammonium nitrate phase stabilizer is prepared. The ammonium nitrate, the surfactant, and the phase stabilizer are soluble in the inert liquid. The amount of surfactant in the solution is about 0.01% to about 0.15% based on the combined weight of the ammonium nitrate and the surfactant. The solution is atomized to form a stream of droplets with an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . The droplets are freeze-dried to form

agglomerates of crystals of phase stabilized ammonium nitrate. The crystals of phase stabilized ammonium nitrate in the agglomerates are coated with a film comprising the surfactant. The agglomerates are disintegrated into separated free-flowing phase stabilized ammonium nitrate crystals coated with a film comprising the surfactant.

Claim 1 is patentable over Mehrotra et al. in view of Rogers et al. and Poole et al. '272 because Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ .

As noted in the Office Action, Mehrotra et al. teaches preparing a solution of ammonium nitrate and phase stabilizer in water, evaporating the water, and then grinding the crystallized ammonium nitrate to form a powder. Mehrotra et al. further teach that although evaporation of the water at a moderate temperature is preferred, the water may be removed by freeze-drying.

The Office Action further notes that Mehrotra et al. do not teach the details of the freeze-drying process. Mehrotra et al. also do not teach adding a surfactant to the solution of ammonium nitrate and phase stabilizer as well as forming a stream of droplets of the solution prior to freeze-drying.

The Office Action relies on Rogers et al. to teach the freeze drying process and that it would be obvious to use a surfactant with the ammonium nitrate and phase stabilizer

solution taught in Mehrotra et al. Rogers et al., however, do not teach or suggest that a surfactant can be combined with a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried.

Rogers et al. teach a method of making ultra-fine ammonium perchlorate particles. In the method taught in Rogers et al., an aqueous solution of ammonium perchlorate and a surface active agent is prepared, sprayed into a film of an organic liquid below the freezing point of the solution, and then freeze-dried. The surface-active agent is added to the ammonium perchlorate solution of Rogers et al. to control the crystal growth of the ammonium perchlorate during freezing.

There is nothing in Rogers et al. that suggests adding a surfactant to a solution of ammonium nitrate and ammonium nitrate phase stabilizer. Moreover, there is nothing in Rogers et al. and Mehrotra et al. that suggests that the addition of a surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze dried will control crystal growth and that it is even desirable to decrease the crystal growth of ammonium nitrate and an ammonium nitrate phase stabilizer during freezing.

Rogers et al. also do not teach or suggest the amount of surfactant recited in claim 1. Rogers et al. teach that the amount of surfactant combined with ammonium perchlorate can be about 0.5% to about 5% by weight of the ammonium perchlorate. This amount is substantially greater than the about 0.01% to about 0.15% weight percent of surfactant recited in claim 1. Moreover, there is nothing Rogers et al. that suggests using

about 0.01% to about 0.15% by weight surfactant, and, more particularly, using about 0.01% to about 0.15% by weight surfactant with ammonium nitrate.

The Office Action argues that Rogers et al. teach an amount of surfactant of say 0.5% to 5% to obtain a specific small size of particle and that with the omission of surfactant a larger particle size can be obtained. The Office Action further suggests that the amount taught is not a minimum in view of the term "say", which the Office Action states is similar to generally, and in view of the teaching that it may be omitted entirely. The Office Action further notes that the amount of surfactant is a result effective variable and the it would therefore be obvious to use an 0.01% to about 0.15% surfactant with the ammonium nitrate.

Rogers et al., as noted in the previous response, do not teach that the amount of surfactant is a result effective variable with respect to a solution containing ammonium nitrate. Rogers et al. only teach a range of surfactant for an ammonium perchlorate solution. There is nothing in Rogers et al. that would teach that the amount of surfactant is a result effective variable for a solution of ammonium nitrate or that a solution of ammonium nitrate would be effected by the surfactant as the solution in Rogers et al. At best, Rogers et al. may teach that it is obvious to try an amount of surfactant that is between 0 and 0.5% by weight for ammonium perchlorate, but this is not taught or suggested as being applicable for solutions of ammonium nitrate. Moreover, it

well established that obvious to try is not a basis for establishing obviousness.

Additionally, the motivation taught in Rogers et al. for adding a surfactant to the ammonium perchlorate is to achieve an "ultrafine particle size", i.e., a particle size of 0.5 to 1.0 micron. Mehrotra et al. as well as Rogers et al. do not teach that this particle size is desirable for an ammonium nitrate composition. Since there is no suggestion in the prior art of the desirability of forming an ultrafine ammonium nitrate, one skilled would have no motivation to add such surfactant to the composition of Mehrotra. As the motivation to make an ultrafine ammonium nitrate did not come from the prior art provided in the Office Action, it appears that the Examiner is using hindsight in finding the present invention obvious. The use of the teachings of the present invention to find obviousness is impermissible.

"The court must be ever alert not to read obviousness into an invention on the basis of applicant's own statements; that is, we must view the prior art without reading into that art applicant's teachings. The issue, then, is whether the teachings of the prior art would, in and of themselves and without the benefits of appellant's disclosure, make the invention as a whole obvious." In Re Sponnoble, 160 USPQ 237 at 243 (CCPA 1969) (emphasis in original).

Accordingly, the Examiner must consider only the teachings of the prior art references. Without the teachings of the present invention, one of ordinary skill in the art would not have a motivation to add a surfactant to the composition of Mehrotra et al.

Thus, the Office Action fails to provide a motivation or suggestion to add a surfactant to a solution of ammonium nitrate and ammonium nitrate phase stabilizer that is freeze-dried as well as adding the surfactant to a solution of ammonium nitrate and ammonium nitrate phase stabilizer in an amount of about 0.01% to about 0.15% by weight of the ammonium nitrate and the surfactant.

Additionally, Mehrotra et al. in view of Rogers and Poole do not teach the diameter of the droplets. Mehrotra et al. do not teach that the ammonium nitrate solution is atomized. Rogers et al. teach the ammonium perchlorate solution is sprayed but the sprayed droplets have a diameter of less than about 10 microns, which is well below the diameter recited in claim 1.

Thus, the prior art cited in the Office Action neither discloses or suggests all the limitations of claim 1. Accordingly, withdrawal of the rejection of claim 1 is respectfully requested.

Claim 2 depends from claim 1 and further recites that the inert liquid is water.

As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Therefore claim 2 should be allowable for the same

reasons as claim 1 and for the specific limitations recited in claim 2.

Claim 4 depends from claim 1 and further recites that the phase stabilized ammonium nitrate crystals have an average diameter of about 1 $\mu\text{m}$  to about 20 $\mu\text{m}$ .

As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Therefore, claim 4 should be allowable for the same reasons as claim 1 and for the specific limitations recited in claim 4.

Claim 6 depends from claim 1 and further recites that the phase stabilizer comprises potassium nitrate.

As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Moreover, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest that the phase stabilizer is potassium nitrate. In the process of Mehrotra et al., potassium fluoride is taught as the phase stabilizer. There is no suggestion in Mehrotra et al. that potassium nitrate can be used in the process of Mehrotra et

al., specifically where the process includes the step of freeze-drying. Therefore, claim 6 should be allowable for the same reasons as claim 1 and for the specific limitations recited in claim 6.

Claim 7 depends from claim 1 and further recites that the freeze-drying step comprises cooling the stream of droplets to a temperature below the freezing point of the solution of ammonium nitrate, inert liquid, surfactant, and phase stabilizer, and sublimating the frozen droplets to remove the inert liquid from the frozen droplets and form the phase stabilized ammonium nitrate.

As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Therefore, claim 7 should be allowable for the same reasons as claim 1 and for the specific limitations recited in claim 7.

Claim 8 depends from claim 7 and further recites that the cooling step is performed by contacting the stream of droplets with a cooling means maintained at temperature below about -130°C.

As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium

nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Therefore, claim 8 should be allowable for the same reasons as claim 1 and for the specific limitations recited in claim 8.

Claim 9 depends from claim 8 and further recites that the cooling means is a drum with an outer surface temperature of below about -130°C.

As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ .

Moreover, Mehrotra et al. in view of Poole et al. '272, Rogers et al. do not disclose or suggest that the cooling means is a drum with outer surface with a temperature below about -130°C. Rogers et al. teaches using a liquid coolant to freeze the solutions. Rogers et al. do not disclose or suggest that the cooling means is the surface of a drum. Therefore, claim 9 should be allowable for the same reasons as claim 1 and for the specific limitations recited in claim 9.

Claim 11 recites a process for preparing phase-stabilized ammonium nitrate. In the process, an aqueous solution of ammonium nitrate, a surfactant, and potassium nitrate are prepared. The amount of surfactant in the solution is about

0.01% to about 0.15% based on the combined weight of the ammonium nitrate and the surfactant. The aqueous solution is atomized to form a stream of droplets with an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . The stream of droplets is cooled to a temperature below the freezing point of the solution. The frozen droplets are sublimated to remove the water from the frozen droplets to form agglomerates of crystals of phase stabilized ammonium nitrate. The crystals of phase stabilized ammonium nitrate in the agglomerates are coated with a film of surfactant. The agglomerates are disintegrated into separated free-flowing phase stabilized ammonium nitrate crystals coated with a film comprising the surfactant.

Claim 11 includes limitations similar to claims 1, 2, 6 and 7. As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Moreover, as discussed above with respect to claim 6, Mehrotra et al. in view of Poole et al. '272 and Rogers et al. do not disclose or suggest that the phase stabilizer is potassium nitrate. Therefore, claim 11 should be allowable for the same reasons as claim 1 and for the specific limitations recited in claim 11.

Claim 12 depends from claim 11 and further recites that the phase stabilized ammonium nitrate crystals have an average diameter of about 1 $\mu\text{m}$  to about 20 $\mu\text{m}$ .

As discussed above with respect to claim 1, Mehrotra et al. in view of Rogers et al. and Poole et al. '272 do not disclose or suggest (1) adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and (2) forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Moreover, as discussed above with respect to claim 6, Mehrotra et al. in view of Poole et al. '272 and Rogers et al. do not disclose or suggest that the phase stabilizer is potassium nitrate. Therefore, claim 12 should be allowable for the same reasons as claim 1 and for the specific limitations recited in claim 12.

Obviousness-type double patenting rejection.

Claims 1-2, 4, 6-9, 11 and 12 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of Sampson et al. No. 6,641,622.

The Office Action in item 6 states that in view of the trivial distinctions between the noted instant claims and the those patented, applicants are required to maintain a line of distinction between Sampson et al. and the present application and that applicant will be required to state who is the new inventor.

Claims 1-2, 4, 6-9, 11 and 12 are not obvious in view of Sampson et al. and therefore withdrawal of the obvious type double patenting rejection is respectfully requested.

Sampson et al. teach a process for preparing phase stabilized ammonium nitrate. In the process a solution of ammonium nitrate, phase stabilizer, and inert liquid is prepared. The solution is atomized to form a stream of droplets and the droplets are freeze-dried to form phase stabilized ammonium nitrate.

Sampson et al., however, do not teach, as recited in claims 1 and 11, adding about 0.01% to about 0.15% surfactant to a solution of ammonium nitrate and an ammonium nitrate phase stabilizer that is freeze-dried and forming droplets that have an average diameter of about 50  $\mu\text{m}$  to about 100  $\mu\text{m}$ . Moreover, the Office Action provides no motivation or suggestion of why these limitations are obvious and merely recites "it is not clear that minor details in certain of the instant claims define over the newly patent claims of Sampson et al."

Since the analysis employed in an obvious-type double patenting determination parallels lines for a 35 U.S.C. 103(a) rejection the factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966) must be met. Among these inquiries, the obvious-type double patenting rejection should make clear:

- (A) the differences between the inventions defined by the conflicting claims; and

(B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim in issue is an obvious variation of the invention defined in a claim in the patent.

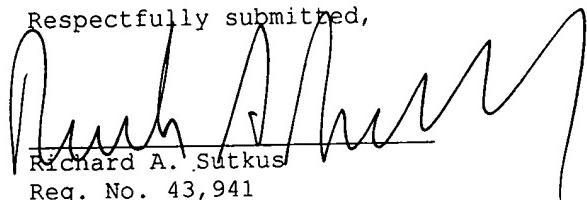
The Office Action fails to point out the differences between the claims and the reasons why a person skilled in the art would conclude the invention defined by the claims is an obvious variation of the invention defined in Sampson et al.

Accordingly, as Sampson et al. do not teach or suggest all of the limitations of claims 1 and 11 and the Office Action fails to provide reasons why claims 1 and 11 are obvious variations of Sampson et al. Withdrawal of the rejection of claims 1 and 11 are specifically requested.

Claims 2, 4, 6-9 and 12 depend either directly or indirectly from claims 1 or 11 and therefore should be allowable for the same reasons as claim 1 and 11 and for the specific limitations recited in claims 2, 4, 6-9, and 12.

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition for allowance, and allowance of the above-identified application is respectfully requested.

Please charge any deficiencies or credit any overpayment  
in the fees for this amendment to our Deposit Account  
No. 20-0090.

Respectfully submitted,  
  
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